The listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claim 1 (currently amended) A method of separating ions comprising the steps of:

providing an analyzer region that is operable in both an rf-only mode and in a FAIMS mode;

introducing ions into the analyzer region;

effecting a selective separation of the ions within the analyzer region substantially during operation in the FAIMS mode; and,

extracting the selectively separated ions from the analyzer region substantially during operation in the rf-only mode.

Claim 2 (original) A method according to claim 1, comprising a step prior to the step of effecting a separation of the ions of: trapping some of the introduced ions within the analyzer region by the application of selected electric potentials at the ends of the analyzer region.

Claim 3 (currently amended) A method according to claim 1 ~~any one of claims 1 and 2~~, comprising a step prior to the step of extracting the selectively separated ions from the analyzer region of: controllably switching the analyzer region from the FAIMS mode to the rf-only mode.

Claim 4 (currently amended) A method according to ~~any one of claims~~ claim 1 ~~to 3~~, wherein the analyzer region is provided as a space between a set of parallel rods, the space having first and second ends.

Claim 5 (currently amended) A method according to ~~any one of claims~~ claim 1 ~~to 4~~, wherein the ions are introduced into the analyzer region substantially during operation of the analyzer region in the rf-only mode.

Claim 6 (original) A method according to claim 5, comprising a step prior to the step of selectively separating ions of: controllably switching the analyzer region from the rf-only mode to the FAIMS mode.

Claim 7 (original) A method according to claim 6, comprising a step prior to the step of controllably switching the analyzer region from the rf-only mode to the FAIMS mode of: collisionally cooling the ions so as to confine the ions within a volume that is smaller than a volume occupied by the ions prior to collisional cooling.

Claim 8 (currently amended) A method according to ~~any one of claims~~ claim 1 ~~to 4~~, wherein the ions are introduced into the analyzer region substantially during operation of the analyzer region in the FAIMS mode.

Claim 9 (currently amended) A method according to ~~any one of claims 1 to 8~~ claim 7, comprising a step prior to the step of extracting ions of: collisionally cooling the selectively separated ions.

Claim 10 (currently amended) A method according to claim 9, comprising a step prior to the step of extracting the selectively separated ions of: controllably switching the analyzer region from the rf-only mode to the FAIMS mode, so as to effect a selective second separation of the collisionally cooled selectively separated ions.

Claim 11 (currently amended) A method according to claim 2, wherein the step of extracting the selectively separated ions includes a step of applying a different selected electric potential at the second end of the analyzer region.

Claim 12 (currently amended) A method according to ~~any one of claims~~ claim 3 ~~to 11~~, comprising a step of providing the extracted selectively separated ions to one of a detector, an analyzer and an ion collector.

Claim 13 (currently amended) A method according to claim 7, comprising a step after the step of extracting the selectively separated ions of: refilling the analyzer region with ions while the analyzer region is operating in the rf-only mode.

Claim 14 (original) A method according to claim 4, wherein the set of parallel rods has a quadrupole configuration.

Claim 15 (original) A method according to claim 14, wherein each parallel rod of the set of parallel rods includes a plurality of coaxially aligned segments.

Claim 16 (currently amended) A method according to claim 15, wherein the selectively separated ions are extracted from the analyzer region as a result of an electric field established within the analyzer region by application of different dc voltages between different sets of segments of the parallel rods.

Claim 17 (currently amended) A method according to ~~any one of claims 1 to 16~~ claim 1, wherein the gas pressure in the analyzer region is in the range between 10^{2} torr to 10^{-6} torr.

Claim 18 (currently amended) A method according to ~~any one of claims 1 to 16~~ claim 1, wherein the gas pressure in the analyzer region is in the range between 10 torr to 10^{-4} torr.

Claim 19 (currently amended) A method according to ~~any one of claims 1 to 16~~ claim 1, wherein the gas pressure in the analyzer region is in the range between 5 torr to 10^{-2} torr.

Claim 20 (currently amended) An apparatus for separating ions comprising:

a set of parallel rods having a space therebetween, the space having first and second ends and defining an analyzer region; and,

an electrical controller for electrically coupling to the set of parallel rods, for applying at least an rf-voltage between the parallel rods of the set of parallel rods in a first operating mode and for applying a combination of an asymmetric waveform voltage

and a direct current voltage between the parallel rods of the set of parallel rods in a second operating mode,
wherein, during use, an ion which is being transmitted through the analyzer region is subjected to the first operating mode and to the second operating mode during a period of time the ion is resident within the analyzer region.

Claim 21 (original) An apparatus according to claim 20, comprising trapping members disposed proximate the first and second ends of the space for providing a stopping voltage, the stopping voltage for cooperating with the rf-voltage in the first operating mode and for cooperating with the combination of an asymmetric waveform voltage and a direct current voltage in the second operating mode to constrain ions within the space between the first and second ends.

Claim 22 (currently amended) An apparatus according to ~~any one of claims 20 and 21~~ claim 20, wherein the set of parallel rods has a quadrupole configuration.

Claim 23 (currently amended) An apparatus according to ~~any one of claims 20 and 21~~ claim 20, wherein each parallel rod of the set of parallel rod comprises a plurality of coaxially aligned segments in an end-to-end arrangement.

Claim 24 (original) An apparatus according to claim 23, comprising an electrically insulating member disposed between adjacent segments of the coaxially aligned segments within a same parallel rod.

Claim 25 (currently amended) An apparatus according to ~~any one of claims 20 and 21~~ claim 21, wherein the trapping members comprise an ion entrance lens disposed adjacent the first end of the space and an ion exit lens disposed adjacent the second end of the space.

Claim 26 (currently amended) An apparatus according to ~~any one of claims 20 and 21~~ claim 20, wherein the set of parallel rods includes six parallel rods.

Claim 27 (currently amended) An apparatus according to ~~any one of claims 20 and 21~~ claim 20, wherein the set of parallel rods includes eight parallel rods.

Claim 28 (currently amended) An apparatus according to ~~any one of claims 20 and 21~~ claim 20, comprising a housing for containing the set of parallel rods and for maintaining a predetermined atmosphere including a bath gas within the analyzer region.

Claim 29 (new) A method according to claim 2, comprising a step prior to the step of extracting the selectively separated ions of: controllably switching the analyzer region from the rf-only mode to the FAIMS mode, so as to effect a selective second separation of the collisionally cooled selectively separated ions.

Claim 30 (new) A method according to claim 4, wherein the set of parallel rods has a hexapole configuration.

Claim 31 (new) A method according to claim 4, wherein the set of parallel rods has an octapole configuration.

Claim 32 (new) A method according to claim 14, comprising a step of controllably switching the analyzer region from the FAIMS mode to the rf-only mode by controllably changing a waveform applied to pairs of opposite rods of the parallel rods, by changing a relative phase shift of two component sinusoidal waves of the waveform.

Claim 33 (new) A method according to claim 32, wherein a step of controllably switching the analyzer region from the FAIMS mode to the rf-only mode comprises changing the dc voltages applied to the pairs of opposite rods of the quadrupole.

Claim 34 (new) A method according to claim 14, wherein the selective separation of the ions within the analyzer region during operation in the FAIMS mode comprises a mass analysis separation.

Claim 35 (new) A method according to claim 15, comprising establishing a potential gradient along a length of the analyzer region for trapping at least some of the introduced ions within the analyzer region.

Claim 36 (new) An apparatus according to claim 22, wherein, during use, an output waveform of the electrical controller is controllably changed from an rf-voltage to an asymmetric waveform voltage by changing a relative phase shift of two component sinusoidal waves of the output waveform.

Claim 37 (new) A method according to claim 3, comprising a step prior to the step of extracting ions of: collisionally cooling the selectively separated ions.